PTO/SB/17 (12-04v2)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL for FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	$0.00

Complete if Known	
Application Number	10/048,012
Filing Date	January 25, 2002
First Named Inventor	Hiroaki Sacki
Examiner Name	T. Brahan
Art Unit	3652
Attorney Docket No.	33082.116

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify) : _____

☒ Deposit Account Deposit Account Number: 02-4300 Deposit Account Name: Smith, Gambrell & Russell, LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below,

☒ Charge any additional fee(s) or underpayments of fee(s) Under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee($)	Fee($)	Fee($)	Fee($)	Fee($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee($)		Fee Paid ($)
20 -20 or HP=		x $50	=	$0

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee($)		Fee Paid ($)
3 - 3 or HP=		$200	=	$0

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
$0	$0

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
0 - 100 =	0 / 50 =	0 (round up to a whole number) x		= 0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge) : Replacement Brief On Appeal ($500.00 paid 1/13/06)	$0.00

SUBMITTED BY

Signature		Registration No. (Attorney/Agent)	28,458	Telephone	(202) 263-4300
Name (Print/Type)	GLENN J. PERRY			Date	May 3, 2006

235901

The PTO did not receive the following listed item(s) A CHECK

BOX AF

BRIEF ON APPEAL
EXPEDITED PROCESSING
GROUP ART UNIT: 3652

Attorney Docket :
033082M116

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

CONF. NO. 1344

In re the application of:	)	
	)	
Hiroaki SAEKI, et al.	)	Group Art Unit: 3652
	)	
Application No.: 10/048,012	)	Examiner: Brahan, T.
	)	
Filing Date: 01/25/2002	)	

For: TRANSFER SYSTEM FOR OBJECT TO BE PROCESSED

REPLACEMENT BRIEF ON APPEAL

May 3, 2006

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This paper responds to the NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF dated March 29, 2006. A Notice of Appeal was filed on November 15, 2005. Applicant's Brief on Appeal (held to be non-compliant) was filed on January 13, 2006. This is a Replacement Brief on Appeal. According to the Advisory Action, the claim amendments set forth in the Amendment filed September 15, 2005 overcame all of the 35 USC 112 issues. Therefore, the issues remaining for this appeal relate to the prior art rejections set forth in the Final Official Action dated June 15, 2005.

REAL PARTY IN INTEREST

The owner of this application is Tokyo Electron Limited, a corporation of Japan having a place of business at 3-6 Akasaka 5-chome, Minato-ku, Tokyo-to, Japan.

RELATED APPEALS AND INTERFERENCES

To the best of the undersigned's knowledge, no other appeals or interferences will directly affect, will be directly affected by, or will have a bearing on the board's Decision in this appeal.

STATUS OF CLAIMS

Claims 1-4 and 6-7 remain pending in the application and are under appeal. These claims are listed in a Claims Appendix as required by 37 C.F.R. 1.192 (c) (9).

STATUS OF AMENDMENTS

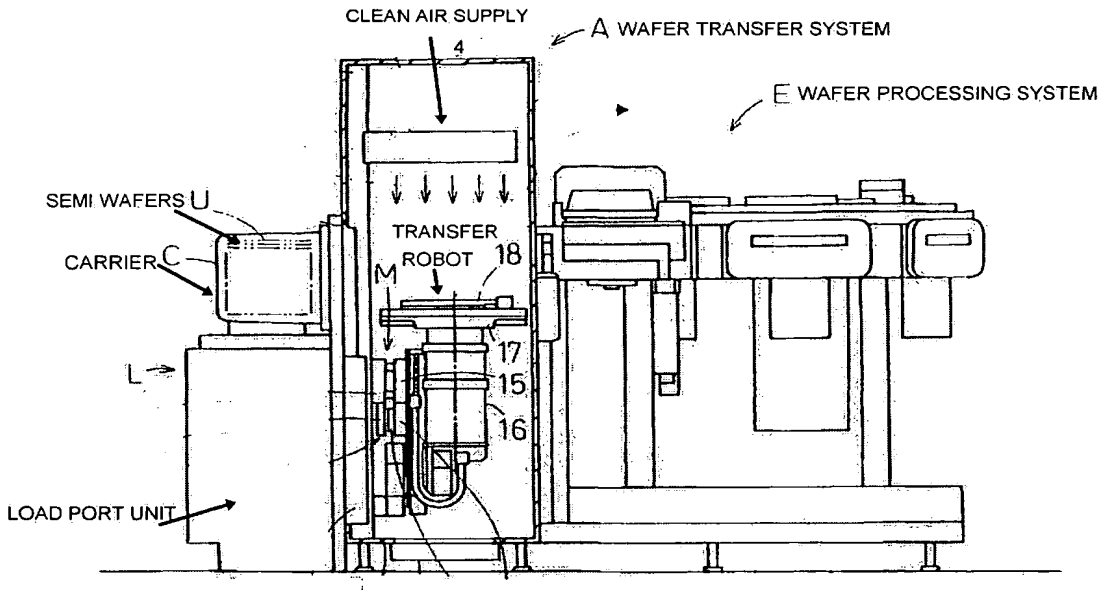
Appellant filed an Amendment After Final filed on September 15, 2005. This amendment was entered and has been made of record. It has been considered by the Examiner. According to an Advisory Action dated September 29, 2005, the claim changes set forth in the Amendment of September 15, 2005 have been entered and were deemed to overcome all outstanding 35 USC 112 rejections.

SUMMARY OF CLAIMED SUBJECT MATER

General Description

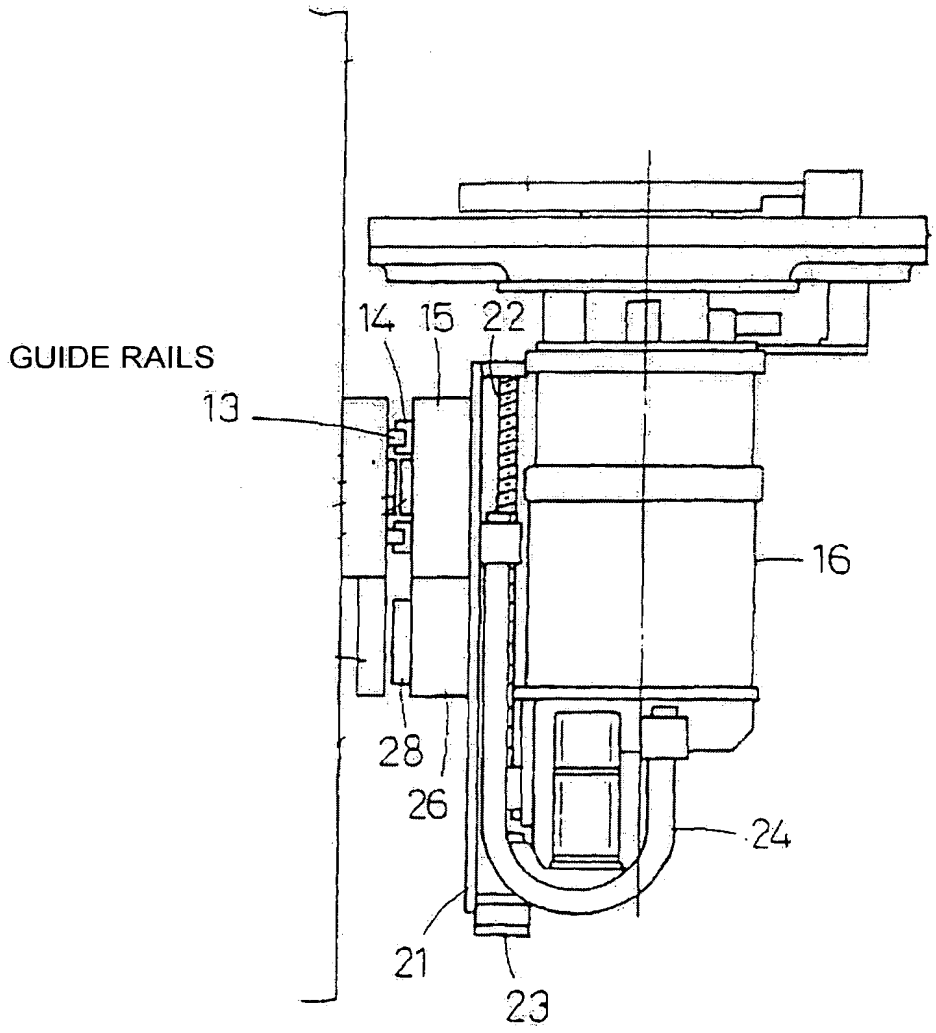
All of the pending claims relate to a wafer transfer system (A) useful in semiconductor fabricating systems. Wafer transfer system (A) transfers an unprocessed semiconductor wafer (U) from a carrier (C), containing multiple wafers, to a wafer processing system (E). After the wafer has been processed, transfer system (A) transfers the processed wafer back to carrier (C). When carrier (C) is brought for processing, it is mounted on a top face of a load port unit

(L). The figure below is patent application Figure 1 with many reference numerals deleted and labels added.



Patent Application Figure 1

Wafer transfer system (A) includes a clean air supply 4 to minimize dust settling on semiconductor wafers and a transfer robot (R) which can move wafers (U) to/from the carrier (C) one at a time. The transfer system is propelled by a linear motor M which runs along guide rails (13). Both the load port unit (L) and guide rails (13) are mounted on a front wall (1a) of a transfer system (A) system body (1). The guide rails are shown in redacted Figure 4 of our application set forth below.



Thus, the load port unit (L) and guide rails (13) are positionally fixed with respect to each other. In other words, both the load port unit and the guide rail are commonly fixed on the front wall.

The robot (R) linearly reciprocates along the guide rails (13). Therefore, because the guide rails and the load port unit are fixed to the same structure (front wall), there is a precise positional relationship between the transfer robot (R) and the carrier (C) positioned on the top face of the load port (L). As a result, the transfer robot accesses the carrier without positional errors common to prior art arrangements. Robot (R) can precisely transfer wafers to and from

the carrier (C). Because, in wafer processing systems, a plurality of stages can be arranged in tiers, with wafers stacked at each stage, such precise movement and positioning of the transfer robot (R) is important.

Concise Explanation of subject matter defined in each of the independent claims

Claim 1

Text of Claim 1	Mention in Specification	Shown in Drawing
A transfer system for transferring an object to be processed out of a carrier which is mounted on a top face of a load port unit and for transferring the object to the carrier, said transfer system comprising:	Transfer system: Page 1, line 15; Object = wafer U: Page 1, line 22; Wafer carrier C: Page 2 line 15 Load port unit L: Page 2, line 14;	wafer transfer system A: figure 1; object = wafer U: figure 1; wafer carrier C: figure 1 load port L: figure 1;
a system body having a bottom, a front wall vertical with respect to the bottom, and a guide rail provided so as to extend in lateral directions of said system body;	System body 1: page 6 line 33; Front wall 1a: page 6 line 24; Guide rails 13: page 8 line 5;	system body 1: figure 1; front wall 1a: figure 1; guide rails 13: figure 4
a linear motor having a secondary side provided so as to extend in lateral directions of said system body and a primary side movable to the secondary side; and	Linear motor M: page 7 line 30;	Linear motor M: figure 4;
a transfer robot which is mounted on the primary side of said linear motor and which is capable of linearly reciprocating along the guide rail,	Transfer robot R: page 6 line 33;	Transfer robot R: figure 3
wherein both said load port unit and the guide rail are mounted on the front wall of	Page 2, line 14; Page 3, line 20 to Page 4 line 20;	See figure 1

said system body, said load port unit is mounted on the outside of the front wall of said system body, and the guide rail is mounted inside of said front wall of said system body,	Page 7, line 35 to Page 8, line 7; Page 8, lines 19-26	
the primary side and the secondary side have vertical oriented opposing faces, and the transfer robot transfers the object from and to the carrier positioned on the top face of the load port unit.	Page 3, line 20 to Page 4 line 20;	Figure 3

Claim 7

Text of Claim 7	Mention in Specification	Shown in Drawing
A semiconductor fabricating system comprising:	Semiconductor fabricating system: page 1 line 16	Figure 1 and others
a transfer system for transferring an object to be processed out of a carrier which is mounted on a top face of a load port unit and for transferring the object to the carrier, said transfer system comprising:	Transfer system: Page 1, line 15; Object = wafer U: Page 1, line 22; Wafer carrier C: Page 2 line 15 Load port unit L: Page 2, line 14;	wafer transfer system A: figure 1; object = wafer U: figure 1; wafer carrier C: figure 1 load port L: figure 1;
a system body having a bottom, a front wall vertical with respect to the bottom, and a guide rail provided so as to extend in lateral directions of said system body;	System body 1: page 6 line 33; Front wall 1a: page 6 line 24; Guide rails 13: page 8 line 5;	system body 1: figure 1; front wall 1a: figure 1; guide rails 13: figure 4
a linear motor having a secondary side provided so as to extend in lateral directions of said system body and a primary side movable to the secondary side; and	Linear motor M: page 7 line 30;	Linear motor M: figure 4;
a transfer robot which is	Transfer robot R: page 6 line	Transfer robot R: figure 3

mounted on the primary side of said linear motor and which is capable of linearly reciprocating along the guide rail,	33;	
wherein both said load port unit and the guide rail are mounted on the front wall of said system body, said load port unit is mounted on the outside of the front wall of said system body, and the guide rail is mounted inside of said front wall of said system body,	Page 2, line 14; Page 3, line 20 to Page 4 line 20; Page 7, line 35 to Page 8, line 7; Page 8, lines 19-26	See figure 1 and others
the primary side and the secondary side have vertical oriented opposing faces, and the transfer robot transfers the object from and to the carrier positioned on the top face of the load port unit, and	Page 3, line 20 to Page 4 line 20;	See figure 1 and other figures
a processing **means for processing** the object to be processed.	"means for processing" is part of a "means + function clause" The processing means is described at page 13 lines 26-28 where it refers to deposition system and wafer transfer system	Referred to generally by E in Figure 1 and other figures.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are presented for consideration in this appeal.

Issue #1

Whether claims 1 and 7 properly have been rejected under 35 U.S.C. 103(a), as being obvious based on Hendrickson et al. (U.S. Pat. No. 6,257,827) in view of Van Doren et al. (U.S. Pat. No. 5,733,096).

Issue #2

Whether claims 2 and 3 properly have been rejected under 35 U.S.C. 103(a) as being obvious over Hendrickson et al. in view of Van Doren et al., and further in view of Akimoto et al. (U.S. Pat. No. 5,844,662).

Issue #3

Whether claims 4 and 6 properly have been rejected under 35 U.S.C. 103(a) as being obvious over Hendrickson et al. in view of Van Doren et al., and further in view of Teramachi (U.S. Pat. No. 4,681,506) or Sakino et al. (U.S. Pat. No. 5,040,431).

GROUPING OF THE CLAIMS

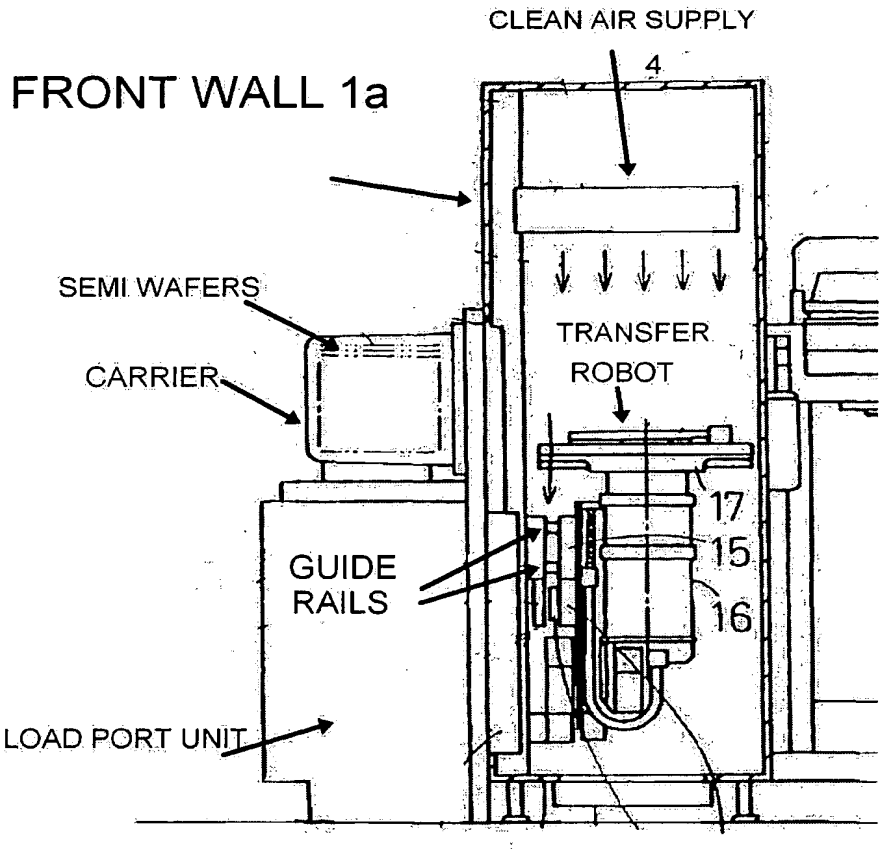
For consideration of this appeal the claims can be grouped together.

ARGUMENT

A. All of the rejections fail to establish Prima Facie Obviousness.

Independent claims 1 and 3 are directed in general to a transfer system particularly useful in semiconductor wafer manufacture. The transfer system transfers a wafer to be processed both out of and back into a carrier (C) mounted on a top face of a load port unit (L). Both the load port unit and a guide rail are mounted on the front wall of the system body so that they are positionally fixed with respect to each other. In other words, both the load port unit and the guide rail are commonly fixed on the front wall.

The robot linearly reciprocates along the guide rail. As shown in the figure below, because the guide rail (into and out of the paper in the figure below) and the load port unit are fixed to the same structure (front wall 1a), there is a precise positional relationship between the transfer robot and the carrier positioned on the top face of the load port.



As a result, the transfer robot accesses the carrier without positional errors, and precisely transfers objects to and from the carrier. Because, in wafer processing systems, a plurality of stages can be arranged in tiers, with wafers stocked at each stage, precise movement and positioning of the transfer robot is important.

Specifically, claim 1 requires:

- carrier mounted on a top face of load port
- guide rail
- linear motor having a primary side and secondary side

- primary side extends in lateral directions of a system body
- primary side movable with respect to secondary side
- a transfer robot mounted on the primary side of linear motor
- transfer robot linearly reciprocates along guide rail,
- both load port unit and the guide rail are mounted on a front wall of system body
- load port unit mounted on the outside of the front wall of system body
- guide rail is mounted inside of said front wall of system body,
- primary side and the secondary side have vertical oriented opposing faces
- robot transfers object from/to carrier positioned on the top face of the load port unit.

Independent claim 7 requires a similar combination of features.

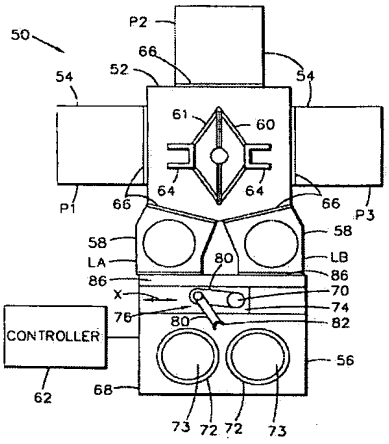
The prior art does not teach fixing the guide rails and load port unit to the same structure so that they are positionally fixed with respect to each other. In order to find this combination of features, the Examiner combines the teachings of Hendrickson et al and Van Doren et al. The Examiner suggests modifying the Hendrickson et al arrangement so as to "accurately position the robot" in the manner taught by Van Doren et al. The Examiner suggests further modifying these combined teachings based on design choice. According to the Examiner, locating the secondary side of the linear motor and its guide rail on the front side of the system body would have been an obvious choice of design, within the limits of routine skill in the art at the time the invention was made by applicant.

Thus, the Examiner admits that even combining the teachings of Hendrickson et al and Van Doren et al alone do not meet the limitations of claim 1. There must be even further modification of the Hendrickson et al arrangement to properly locate the guide rails.

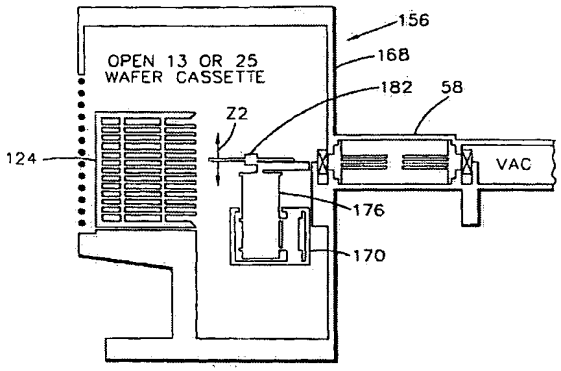
The Examiner asserts that Hendrickson teaches a system having both the load port unit (72) and the guide rail mounted on the front wall (68) of the system body. In Hendrickson's system, the cassette (73) is moved vertically with respect to the load port unit (72). See column 4, lines 46-48.

> The substrate cassette holders 72 are adapted to vertically move the cassettes 73 relative to the frame 68 as indicated by arrow Z2.

Hendrickson Figure 2, below, shows cassette holders 72, cassettes 73 and frame 68. Hendrickson Figure 3A, below, shows arrow Z2 referred to in the quoted passage.



Hendrickson Figure 2



Hendrickson Figure 3

In other words, in Hendrickson's system, the cassette (73) is moved to the transfer robot (76) instead of moving the transfer robot (76) to the cassette (73) when a wafer is transferred from and to the cassette (73). In Hendrickson's system, the movement of the transfer robot (76) is to access load locks (58) and not to transfer a wafer from and to the cassette (73).

Since it is the cassette (73) that is moved vertically with respect to the load port unit (72), a precise positional relationship cannot be attained between the transfer robot (76) and the carrier (73). This is so even if both the load port unit (72) and the guide rail are mounted on the front wall (68) of the system body in Hendrickson.

In contrast, in our claimed arrangement, carrier (C) is mounted on the top face of the load port unit (L) and does not move with respect to the load port unit (L). Rather, it remains stationary. Then, as explained above, because the guide rail and the load port unit are fixed to the same structure in our claimed arrangement, there is a precise positional relationship between the transfer robot and the carrier positioned on the top face of the load port. This precise positional relationship leads to operational advantages over systems not having such a precise positional relationship.

These features are neither taught nor fairly suggested by Hendrickson et al or Van Doren et al. In addition, there is nothing in the teachings of either of these references that suggests why one of ordinary skill in the art would modify the Hendrickson et al arrangement in a manner taught by Van Doren et al and then to make further design choices in order to achieve the unique combination of features described above.

The rejection of claims 2 and 3 is similar but it is made further in view of Akimoto et al. The deficiencies of Hendrickson et al and Van Doren et al are discussed above. Akimoto et al is cited for its teaching of a clean air system. Its teachings are not disputed. However, the reference does not cure the insufficiency of the combined teachings of Hendrickson et al and Van Doren et al. The cited references simply to not suggest a transfer system having a carrier that is mounted on the top face of the load port unit wherein the carrier remains stationary thereby enabling a precise positional relationship between the transfer robot and the carrier. There is nothing in the teachings of the cited patents which would have motivated those of ordinary skill to have arrived at Applicants' claimed structural arrangement.

With respect to claims 4 and 6, the Examiner further relies upon Teramachi or Sakino et al. Again, the deficiencies of Hendrickson and Van Doren are discussed above. Neither of these additional references remedy the deficiencies described above with respect to the basic combination of Hendrickson et al and Van Doren et al. None of the cited patents teaches or fairly suggests a transfer system having a carrier that is mounted on the top face of the load port unit wherein the carrier remains stationary thereby enabling a precise positional relationship between the transfer robot and the carrier. There is nothing in the teachings of the

cited patents which would have motivated those of ordinary skill to have arrived at Applicants' claimed structural arrangement.

* * * * *

Applicants respectfully submit that this Brief on Appeal establishes that the Examiner's rejections should be reversed.

If any additional fees are due in connection with the filing of this Amendment, such as fees under 37 C.F.R. §§1.16 or 1.17, please charge the fees to Deposit Account 02-4300; Order No. 033082.116.

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By: _____

Glenn J. Perry, Reg. No. 28,458
1850 M Street, N.W., Suite 800
Washington, D.C. 20036
Telephone: (202) 973-2611
Facsimile: (202) 263-4311

Dated: May 3, 2006

Claims Appendix

The following is a complete listing of the claims as they stand on appeal.

Claim 1. A transfer system for transferring an object to be processed out of a carrier which is mounted on a top face of a load port unit and for transferring the object to the carrier, said transfer system comprising:

a system body having a bottom, a front wall vertical with respect to the bottom, and a guide rail provided so as to extend in lateral directions of said system body;

a linear motor having a secondary side provided so as to extend in lateral directions of said system body and a primary side movable to the secondary side; and

a transfer robot which is mounted on the primary side of said linear motor and which is capable of linearly reciprocating along the guide rail,

wherein both said load port unit and the guide rail are mounted on the front wall of said system body, said load port unit is mounted on the outside of the front wall of said system body, and the guide rail is mounted inside of said front wall of said system body,

the primary side and the secondary side have vertical oriented opposing faces, and

the transfer robot transfers the object from and to the carrier positioned on the top face of the load port unit.

Claim 2. A transfer system as set forth in claim 1, which further comprises an exhaust fan which is provided on the bottom of said system body.

Claim 3. A transfer system as set forth in claim 2, which further comprises a clean air supply system for supplying clean air to said object which is transferred by said transfer robot, said clean air supply system being provided in an upper portion of said system body.

Claim 4. A transfer system as set forth in claim 1, which further comprises a braking device including:

a movable body which is mounted on one of the primary and secondary sides of said linear motor, said movable body being subject to a magnetic attraction of a coil, which is included in said one of the primary and secondary sides, against a resilient restoring force of a compression spring acting in the opposite direction to said magnetic attraction; and

a brake plate which is mounted on the other side of the primary and secondary sides of said linear motor so as to face said movable body, said brake plate being contacted pressingly with said movable body by interrupting the feeding of power to said coil.

Claim 5. (canceled)

Claim 6. A transfer system as set forth in claim 4, wherein said system body is provided with an emergency stop switch for emergency-stopping a processed-object transfer robot, and the feeding of power to said coil is interrupted by operating said switch.

Claim 7. A semiconductor fabricating system comprising:

a transfer system for transferring an object to be processed out of a carrier which is mounted on a top face of a load port unit and for transferring the object to the carrier, said transfer system comprising:

a system body having a bottom, a front wall vertical with respect to the bottom, and a guide rail provided so as to extend in lateral directions of said system body;

a linear motor having a secondary side provided so as to extend in lateral directions of said system body and a primary side movable to the secondary side; and

a transfer robot which is mounted on the primary side of said linear motor and which is capable of linearly reciprocating along the guide rail,

wherein both said load port unit and the guide rail are mounted on the front wall of said system body, said load port unit is mounted on the outside of the front wall of said system body, and the guide rail is mounted inside of said front wall of said system body,

the primary side and the secondary side have vertical oriented opposing faces, and

the transfer robot transfers the object from and to the carrier positioned on the top face of the load port unit, and

a processing means for processing the object to be processed.

Claims 8 and 9. (canceled)

*** End of Claims Appendix

Evidence Appendix

No declarations or affidavits under 37 CFR 1.130, 1.131 or 1.132 were submitted. Only arguments were made based on the references cited by the Examiner.

*** End of Evidence Appendix

Decisions Appendix

There have been no decisions rendered in any related appeals or interferences.

*** End of Decisions Appendix